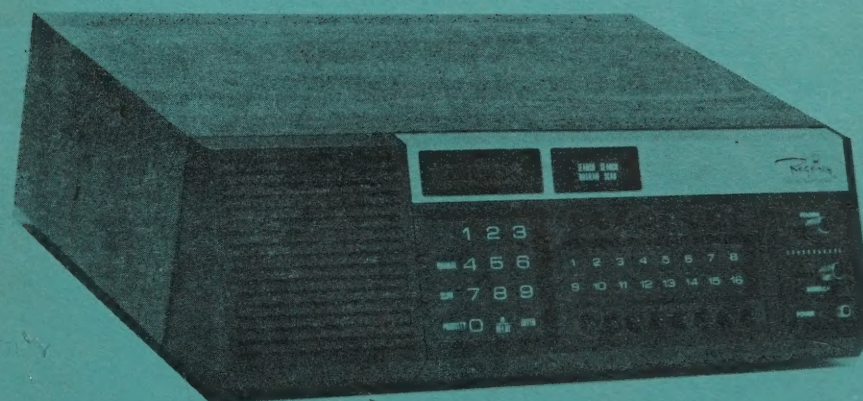


ACT-T-720A

# Digital Flight Scan

by  **Regency**  
the first name in solid state®



## Owner's Manual





# PACKING LIST

- 1 - Receiver Unit
  - 1 - AC Power Cord
  - 1 - Telescope Antenna with Right-Angle Adapter
  - 1 - Owner's Manual
  - 1 - Warranty Card
- To be filled out and returned to:

Regency Electronics, Inc.  
 7707 Records Street  
 Indianapolis, Indiana 46226

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PLEASE RECORD SERIAL NUMBER AND DATE PURCHASED:

SERIAL NO. \_\_\_\_\_ DATE PURCHASED \_\_\_\_\_

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT  
 EXPOSE THIS UNIT TO RAIN OR MOISTURE.

WARNING: Before using internal battery, please read  
 Battery Section on page 6 .



## DESCRIPTION

The Regency ACT-T-720A is a programmable 16-channel, AM monitor receiver. It is a double-conversion superheterodyne used to receive communications in the Aircraft band, 108-136 MHz.

The need for crystals has been eliminated by the use of computer type circuits which permit the frequency of each channel to be entered by a keyboard numbered like the one used on a telephone.

Any combination of one to sixteen channels may be scanned.

Manual selection of channels is available to permit continuous monitoring of any one channel.

Two "Priority" options are provided. Channel 1 can be programmed "Priority". In addition, any other channel, (2 through 16) can be programmed "Priority". These two "Priority" options may be used separately or in combination.

A search feature permits unknown frequencies to be located. Keyboard programming permits searching any segment of any the band, or the entire band if desired.

A variety of messages appear on the readout during programming and operation of the receiver.

The ACT-T-720A may be operated from 117 VAC or 12 VDC.

Provisions are made for external antenna and external speaker.

## TROUBLESHOOTING GUIDE

NOTE: Please perform the simple checks indicated for operation before returning the unit for service.

SYMPTOM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
No channel lights, no sound	X																					
Channel light, no sound	X																					
No reception (no stations heard)	X																					
Weak or poor reception																						
Does not scan																						
Error appears on readout																						
Memory loss after power failure																						
"Priority" will not enter																						
Search scan stops on channel without stations																						
CHECK THE FOLLOWING ITEM:																						
OFF/ON Switch should be pushed to the right.	X																					
Power Cord (AC or DC) connection; also see Power Requirements.	X																					
DC Power Cord's Fuse - replace with 1.5 Amp fuse if blown.																						
Volume Control Setting - should be at least 1/3 to the right.																						
Squelch Control Setting - see page 6 for details.																						
Antenna - should be fully extended.																						
Stations too far away - External antenna may be needed.																						
Incorrect channel frequencies.																						
In MANUAL or PROGRAM mode - Touch <b>SCAN</b> .																						
Channels locked out - see page 11.																						
Invalid frequency entry - see page 10.																						
No battery installed or dead battery - see page 7.																						
Must be in SCAN or MANUAL to enter "Priority"																						
Birdies - see page 22.																						



## BIRDIES

Every complex receiver has frequencies that are difficult or impossible to receive. These frequencies are called "Birdies". Three of these birdie frequencies that occur in the ACT-T-720A are:

112.700 MHz  
122.950 MHz  
134.100 MHz

In addition, there are other frequencies that have difficulty because of interference from T.V. stations, other receivers, and sources of man-made noise. These frequencies will vary from location to location and are therefore impossible to list. When this type of interference is encountered, the interference can sometimes be eliminated by moving the Squelch Control to the left, (increase squelch action).

## ACT-T-720A SPECIFICATIONS

Frequency Range..... 108-136 MHz

Search Frequency Increments:

108-118 MHz..... 50 KHz  
118-136 MHz..... 25 KHz

Sensitivity (10 DB S + N/N at tune-up)..... 1 uv

Adjacent Channel Rejection..... 55 DB

Spurious Rejection (except Primary Image)..... 55 DB

I.F. Frequencies.... 1st IF: 10.7 MHz; crystal filter  
2nd IF: 455 KHz; ceramic filter

Reference Oscillator  
(Synthesizer)..... Crystal Controlled

Scanning Rate..... approx. 16 channels per second

Search Scanning Rate

108-118 MHz..... 1.2 sec. per MHz  
118-136 MHz..... 2.4 sec. per MHz

Scan Delay

Normal..... approx. 0.6 seconds  
With Delay Option..... approx. 2 seconds

Search Delay..... approx. 3 seconds

Audio Output..... 1 Watt @ 5%, or less, distortion;  
2 Watts maximum

Speaker (Internal)..... 8 ohms; 3" square

Power Requirements.. 110-130 VAC, 60 Hz; 18 Watts max.  
11.5-15 VDC; 9 Watts max.

Memory Saver Battery (optional)..... 9 volt,  
transistor radio type



# Display (Frequency and Message Readout)..... 7-digit, 7-segment LED type

## Semiconductors:

Integrated Circuits.....	20
Transistors.....	30
Diodes (total).....	34
Rectifier.....	3
Zener.....	1
Varactor.....	4
Light Emitting (LED).....	18
Signal, Silicon.....	6
Signal, Germanium.....	2

FCC Certified..... Part 15, Subpart C

UL Listed..... Radio Receivers, Audio Systems and Accessories

Size.....	12 1/2" wide x 3 3/4" high x 9 3/4" deep
Weight.....	8 lbs.

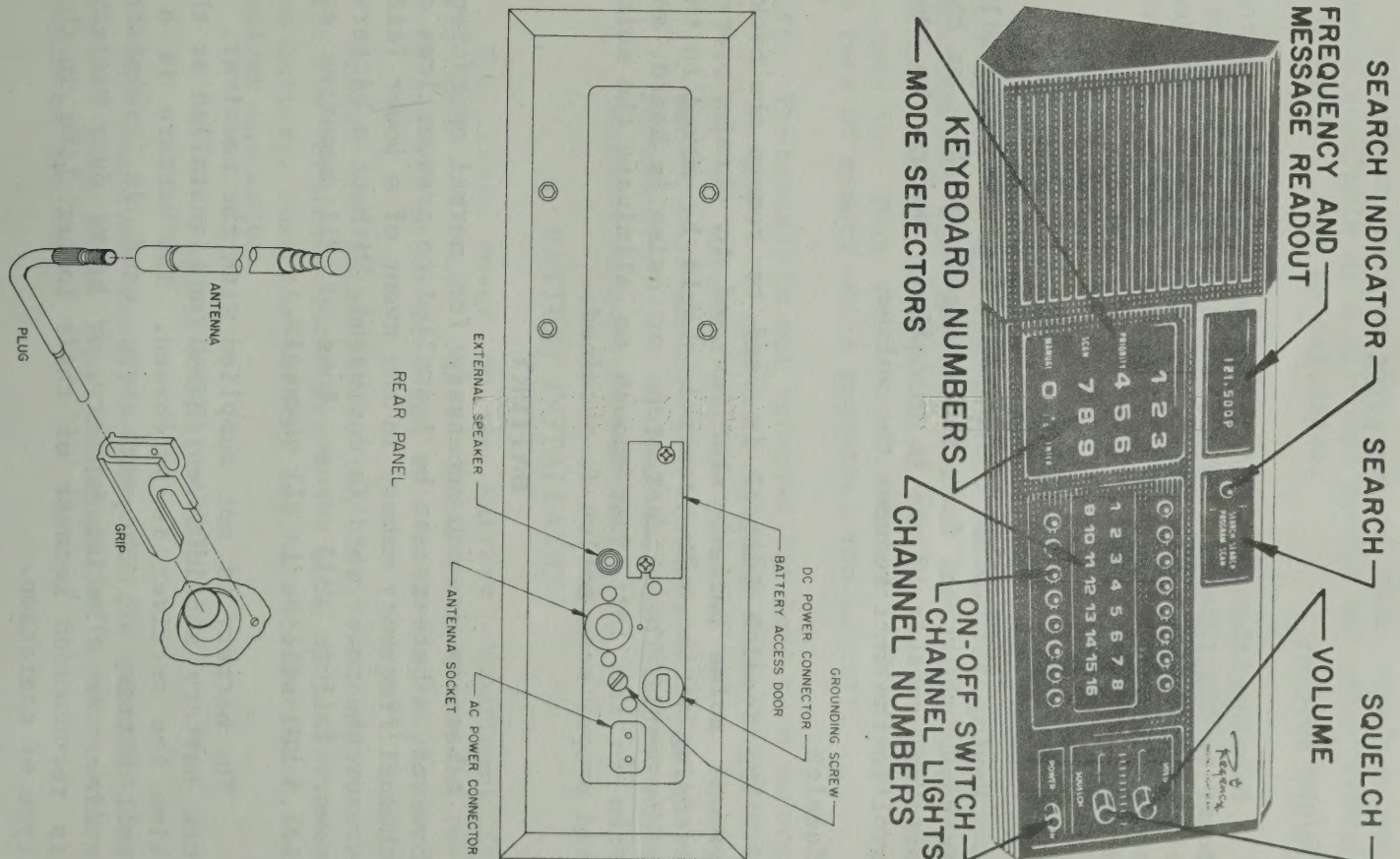
DIGITS\* = Desired Frequency (up to 6 digits plus decimal point)

	PRIORITY	CHAN #1	Toggle Function
	PRIORITY	CHAN #1	Toggle Function
	PRIORITY	CHAN #	Toggle Function
	PRIORITY	CHAN #	Toggle Function
	PRIORITY	CHAN #	Toggle Function
	PRIORITY	NEW CHAN #	
Priority (Scan or Manual Mode)	Enter Chan #1 Priority		
	Remove Chan #1 Priority		
	Enter Second Priority		
	Remove Second Priority		
	Move Second Priority to another channel		

ACT-T-720A PROMPTING MESSAGES	EXPLANATION
Prior	SCAN or MANUAL Mode - Priority programming in process
P	SCAN or MANUAL Mode - Priority activated.
L	MANUAL Mode - Channel locked out in SCAN.
P (only while scanning)	SCAN Mode - SCAN delay selected.
P	SEARCH Mode - SEARCH delay selected.
Error	Invalid Frequency - (not in Aircraft band).



DESIRED ACTION	PRESS THE FOLLOWING KEYS AS INDICATED
Manual/Program Mode	<b>MANUAL</b>
Select Channel	<b>CHAN #</b> (Channel Numbers)
Program Channel	<b>DIGITS*</b> (Keyboard Numbers) <b>ENTER</b> <b>CHAN #</b> (Channel Numbers)
Put one channel's frequency into another channel	<b>CHAN #</b> (Channel containing frequency) <b>ENTER</b> <b>CHAN #</b> (Channel to receive frequency)
Scan Mode	<b>SCAN</b>
Deactivate (lockout) Channel	<b>CHAN #</b>
Activate Channel	<b>CHAN #</b> } Toggle Function (Channel turns on and off alternately)
Activate Scan Delay (2 sec.)	<b>DELAY</b>
Deactivate Scan Delay	<b>DELAY</b> } Toggle Function
Search Program Mode	<b>SEARCH PROGRAM</b> (Chan 1 or Chan 2 light will be on)
Program Search "START" (LO) Freq.	<b>DIGITS*</b> <b>ENTER</b> <b>CHAN #1</b> (Chan #1 lights)
Program Search "STOP" (HI) Freq.	<b>DIGITS*</b> <b>ENTER</b> <b>CHAN #2</b> (Chan #2 lights)
Verify Search Frequencies	<b>SEARCH PROGRAM</b> - <b>SEARCH PROGRAM</b> Toggle Function Chan #1 and Chan #2 alternately light)
Search Scan Mode	<b>SEARCH SCAN</b>
Move Search Off Active Frequency	<b>SEARCH SCAN</b> (Also used to resume Search when Search hold (no delay) is activated)
Manually increment (step) Search Scan	<b>SEARCH SCAN</b> - <b>SEARCH SCAN</b> (Squelch open; Search moves one step each time is pressed) <b>SEARCH SCAN</b>
Activate Search Delay (4 sec.)	<b>DELAY</b>
Activate Search Hold (no delay)	<b>DELAY</b> } Toggle Function
Move Frequency from Search to Channel	<b>ENTER</b> <b>CHAN #</b> (Must press <b>ENTER</b> while Search Scan is stopped)
Change Search's "START" or "STOP" Freq.	<b>SEARCH PROGRAM</b> <b>DIGITS*</b> <b>CHAN #1</b> or <b>CHAN #2</b>





## CONTROLS

### ON/OFF Switch:

Pushing the ON/OFF Switch to the right applies power to the receiver. Power is applied to the memory circuits at all times when the power cord is plugged in. Turning the switch off will NOT cause loss of memory.

### Volume:

Moving the Volume Control knob to the right will increase the sound from the internal speaker, or the external speaker if one is installed. Moving the control to the left reduces the volume.

### Squelch:

The Squelch Control is used to remove the background noise between stations and to obtain proper scanning action. The control should be moved to the right until the scanner stops or noise is heard, and then to the left just enough to eliminate the noise and proper scan action is obtained.

## BATTERY

A battery is not necessary for normal operation, however, a battery can be installed to prevent loss of channel frequency memory in the event of a power failure or the power cord is unplugged. Without a battery, power failure will cause loss of all memories and 121.5 MHz will be in all channels.

The battery is not supplied with the receiver. A new battery should be purchased and installed at the time the receiver is purchased. The battery is a 9 volt battery of the same type used in transistor radios. An alkaline battery, or heavy duty battery, is recommended because of their longer life in this type of operation.

In SEARCH mode, DELAY is used to turn the three second "SEARCH DELAY" ON and OFF. The readout will show a "d" when the delay is turned on. When the "SEARCH DELAY" is "ON", the search will stop on an active frequency and remain for three seconds after the signal goes off, then resume searching. Without the delay turned on, the SEARCH will stop on an active frequency and remain indefinitely after the signal goes off, until SEARCH SCAN is touched to resume the SEARCH.



**MANUAL**, or it may be written over it with a new frequency. "Error" will disappear when the first number of the new frequency is touched.

The memories will accept three numbers AFTER the decimal point. Whenever the numbers AFTER the decimal point are invalid, the unit will round them to the nearest valid frequency when **ENTER** is touched.

If the decimal point is misplaced in a valid frequency, the unit will move the decimal point to the correct place.

KEYBOARD NUMBERS, zero through 9 and decimal point, are used to enter frequencies into the channel memories, and the "START" and "STOP" frequencies into the search feature. The decimal point is shared with the DELAY function.

CHANNEL NUMBERS, 1 through 16, are used to select channels. The frequency in the channel memory will be displayed when any channel is selected. If the channel has not been previously programmed, the frequency will be 121.5 MHz.

CHANNEL NUMBERS 1 and 2 are also used when programming the "START" and "STOP" frequencies into the SEARCH feature. Programming the SEARCH frequencies has no effect on the frequency in the channels 1 and 2 memory for SCAN and MANUAL functions.

**ENTER** is used when programming frequencies into the channel memories and the SEARCH memories.

**DELAY**, which is shared with decimal point, is used to enter and remove the 2 second delay when in the scan mode. The 2 second delay may be turned on at any time in SCAN mode, whether scanning or stopped on a signal. A "d" will appear on the readout when the scanner is scanning. Each time **DELAY** is touched, the 2 second delay will turn ON and OFF alternately.

Batteries suitable for use in this receiver are widely available at electronic stores and other places that carry a line of batteries.

A partial list of available batteries is:

<u>Alkaline Batteries</u>	<u>Heavy Duty Batteries</u>
Eveready #522DB	Eveready 222
Mallory MN1604	Burgess 2MN6

The battery should be replaced approximately once a year in normal use. If numerous power failures have occurred, or if the channels lose memory after a power interruption, the battery should be replaced. The battery should be installed while the receiver is plugged in. When done in this manner, there will be no loss of memory while replacing the battery.

NOTE: The battery is not intended for long term memory storage. If the unit is going to be unplugged for an extended period of time, it is recommended that the battery be removed. Also it is recommended that a dead battery be removed or replaced as soon as possible.

#### BATTERY INSTALLATION

The access cover on the battery compartment is held with 2 screws. One of these screws must be removed and the other loosened to remove the cover.

Insert the battery part way into the compartment with the terminals out. Press the snap connector onto the battery. Push the battery into the compartment and replace the cover.

#### HOME INSTALLATION

The receiver requires very little ventilation, however, warm areas near radiators or heating vents should be avoided.



Refer to the illustration on page 5 and assemble the telescope antenna and adapter. Make sure the plug is firmly seated in the plastic grip. Insert the adapter into the external antenna socket with the antenna straight up.

Plug the AC cord into the AC connector on the rear of the receiver. Plug the opposite end into a 117 volt AC wall outlet.

Install the battery as outlined on page 7. To conserve battery power, do not leave the receiver for any length of time without power applied.

If the receiver fails to operate properly, especially after a power failure, turn the unit off and then on again. Touch SCAN or MANUAL. If unit is still operating improperly, remove the battery and repeat the above steps.

### MOBILE INSTALLATION

The ACT-T-720A will operate from any 12 volt, negative ground electrical system. A DC power cord, Regency part number MA-17, will be required. The DC cord should be connected to the battery, not through ignition switch.

A battery should be installed in the receiver to reduce the possibility of memory loss during engine starting.

If the scanner fails to operate properly after engine starting, turn the radio off and then on to restore proper operation. The electrical system in the vehicle should be checked to determine the cause of the low voltage.

Temporary mobile operation is possible by using a DC power cord with lighter plug attachment, Regency part number MA-18. This cord will permit the unit to

1. Set the Squelch Control halfway between threshold (the point where the noise just disappears) and the full left position. This setting will reduce any tendency the receiver may have to respond to undesired frequencies. Some experimenting with the Squelch Control setting is recommended to obtain the best results in any particular location.
2. If a desired signal appears to be received at more than one frequency, select the frequency that results in clearest reception (voice not garbled, least noise, etc.). This effect is most likely to occur on very strong signals.
3. In the Search mode, limit the search range to one megahertz or even less. This will increase the chance of catching an unknown station while it is transmitting. The transmissions are usually short.
4. Select the Start and Stop frequencies of the Search mode to avoid known birdies. This may be done by limiting the range to be searched to small segments just above or below the birdies. This will help to avoid the search being stopped by undesired frequencies.

### FUNCTION DESCRIPTIONS

The FREQUENCY READOUT will read the frequency whenever the scanner is stopped on a channel in either MANUAL, SCAN, or SEARCH. During programming, the frequency will disappear when the first number of the new frequency is touched.

The readout will indicate the frequency continuously in the search mode.

If "Error" appears on the readout during programming, the frequency to be entered is not the Aircraft band. The ERROR indication may be removed by touching



If "Error" appears on the readout, the START frequency is not lower than the STOP frequency. Touch SEARCH PROGRAM. Key in a proper START, or STOP, frequency and touch ENTER. Touch Channel 1, or 2, and touch SEARCH SCAN.

The Search may be stepped manually if desired. Move the Squelch Control to the right until noise is heard and the search stops. Touch SEARCH SCAN. Each time SEARCH SCAN is touched, the search will move one increment (50 KHz from 108 to 118 MHz; 25 KHz from 118 to 135.975 MHz).

### SEARCH DELAY PROGRAMMING

A choice of two modes of search delay is provided. "Hold" and "Delay". With "Hold", the Search Scan will remain on the active frequency indefinitely until SEARCH SCAN is touched to restart the search. In "Delay", the Search will move on approximately three seconds after the signal goes away. Initially, the delay feature is automatically programmed "Hold".

These two modes are selected by touching DELAY while the Search is scanning. Each time DELAY is touched, the delay will change from one to the other.

The mode that has been selected will be indicated immediately on the readout. "Delay" is indicated with the frequency followed by a "d". "Hold" is indicated by the readout showing only the frequency.

### OPERATION HINTS

Following the instructions presented thus far should result in a properly operating receiver, however, there are, in addition to the specific instructions, some hints that may prove helpful and improve the overall operation.

be operated while sitting on the seat. The telescope antenna will usually be sufficient for this type of operation.

A coupling harness, Regency part number MA-5, is available to allow the AM auto antenna to be used with the ACT-T-720A.

### INITIAL POWER TURN-ON

When power is first applied, ALL 16 channels are programmed to 121.5 MHz, the aircraft emergency frequency.

The receiver will come on scanning all 16 channels.

Search Delay is pre-programmed for "Hold". See page 16 for detailed information on Search Delay programming.

### PROGRAMMING

The switches on the touch panels are located under the number or letters. The switches are operated by applying light pressure with a finger directly on the number or letters. A slight "click" will be felt to indicate that the switch has operated.

Whenever a specific switch is referred to in the following instructions, it will be enclosed in a box. For example, the switch designated as MANUAL will be printed as MANUAL.

The frequency in any channel may be changed as desired.

The readout indicates the frequency whenever the scanner is stopped on a channel in either MANUAL or SCAN mode. The readout indicates continuously while in SEARCH SCAN.



## PROGRAMMING CHANNEL FREQUENCIES

See page 5 for number locations.

Touch **MANUAL**. The scanner will stop and the readout will display the frequency in the memory of the channel indicated. If this channel has not been previously programmed, the frequency will be 121.5 MHz. It is not necessary to move the scanner to the channel to be programmed. If desired, the frequency in the memory of the channel to be programmed may be checked by touching its **CHANNEL NUMBER**.

Enter the desired frequency by touching the numbers on the **KEYBOARD** in the proper place. Be sure to enter the decimal point at the correct place. The frequency on the readout will turn off when the first number of the new frequency is entered. If a mistake is made in entry, touch **MANUAL** and start over.

Touch **ENTER**. If "Error" appears on the readout, the frequency is not in the Aircraft band (108-136 MHz). Touch **MANUAL** and enter a correct frequency.

Touch the **CHANNEL NUMBER** of the channel to receive the frequency entry. If the scanner is not on the selected channel, the indicator will immediately jump to the selected channel and the readout will indicate the frequency.

Repeat this procedure for each of the channels to be programmed.

When all desired channels are programmed, touch **SCAN**. If necessary, adjust the squelch control to obtain proper scan action. The channels that are not to be scanned may be turned off by touching the **CHANNEL NUMBERS** of these channels. The channels may be turned back on by touching the **CHANNEL NUMBER** again. Each time the **CHANNEL NUMBER** is touched, the channel will turn off and on alternately. Whenever a channel is turned either on or off, the scanner will jump to that channel and then resume scanning.

Programming the Search feature has no effect on the frequencies stored in the Channel 1 and Channel 2 memories for **SCAN** or **MANUAL** purposes, these are completely separate functions and memories.

### ENTER SEARCH "START" FREQUENCY

Touch **SEARCH PROGRAM** on the Search panel. Channel 1 light will be on and the readout will display the frequency in the Search "START" memory.

Enter the desired frequency by touching the **NUMBERS** on the **KEYBOARD** in the proper order. Be sure to enter the decimal point at the correct place.

Touch **ENTER**. If "Error" appears on the readout, the frequency is invalid (out of band). Key in a correct or valid frequency and touch **ENTER**.

Touch **CHANNEL NUMBER 1**. The frequency will be entered and the readout will indicate the frequency.

### ENTER SEARCH "STOP" FREQUENCY

Touch **SEARCH PROGRAM**.

Enter the frequency by touching the **KEYBOARD NUMBERS** in the proper order. Be sure to enter the decimal point at the correct place. Touch **ENTER**. If "Error" appears on the readout, the frequency is invalid. Key in a valid frequency and touch **ENTER**.

Touch **CHANNEL NUMBER 2**. The frequency will be entered and the readout will indicate the frequency.

### SEARCH SCAN

Touch **SEARCH SCAN** to start the search.

If noise is heard and the readout indicates the **START** frequency, move the Squelch Control to the left just enough to eliminate the noise and touch **SEARCH SCAN** again.



Touch the CHANNEL NUMBER.

Each time PRIORITY - CHANNEL NUMBER is touched, the "SECOND PRIORITY" will be turned "ON" and "OFF" alternately. The "SECOND PRIORITY" channel may be moved to another channel at any time by touching PRIORITY - NEW CHANNEL NUMBER.

## PROGRAMMING "SEARCH" FREQUENCIES

Two frequencies are used in the Search Mode. These frequencies are designated "START" and "STOP" frequencies. The "START" frequency MUST be lower than the "STOP" frequency. After the "START" and "STOP" frequencies have been programmed and the Search is started, the unit will start searching at the "START" (lower frequency) and search towards the "STOP" (higher frequency). Upon reaching the "STOP" frequency, the Search will automatically go back to the "START" frequency and start over.

During Search programming, the Channel 1 or Channel 2 light will be on. The light will change from one to the other alternately each time SEARCH PROGRAM is touched. The frequency displayed by the readout will be the "START" frequency when Channel 1 light is on, and the "STOP" frequency when Channel 2 light is on. The readout will indicate the last frequency programmed into the search memories. If the search has not been previously programmed, the "START" frequency will be 108.000 MHz and the "STOP" frequency will be 135.975 MHz.

There are two Search Scan frequency increments used, depending upon the segment of the band that is being searched. From 108 to 118 MHz, a 50 KHz increment is utilized. A 25 KHz increment is used in the 118 to 135.975 segment. Any increment keyed in that does not match either of these two specified choices will automatically be corrected to a proper increment.

When channels are selected manually, an "L" will appear after the frequency on the readout on each channel that has been "locked out". The lockout indication applies only to Scan; the channels will be received when selected manually.

If an attempt is made to lockout all 16 channels, the last remaining channel will not turn off.

The frequency in any channel memory may be put into any other channel memory.

Touch MANUAL.

Touch the CHANNEL NUMBER of the channel containing the frequency to be put into another channel. The readout will indicate the frequency.

Touch ENTER.

Touch the CHANNEL NUMBER of the channel to receive the frequency entry. The channel light will jump to the channel and the readout will indicate the frequency. The frequency is not removed from the original channel, the frequency will be in both channels.

## SCAN DELAY SELECTION

When the receiver is in SCAN mode, there are two scan delay times available. One of these is approximately 1 1/2 second, the other is approximately 2.0 seconds. When the 2 second delay is selected, a "d" will appear on the readout whenever the channels are being scanned. The scan delay is changed by touching DELAY. Each time DELAY is touched, the scan delay time will change from one to the other.

## PROGRAMMING "PRIORITY"

Two "PRIORITY" channels are available. One of these must be Channel 1. The other may be any one of



the remaining channels (2 through 16). These two "PRIORITIES" may be used individually, or they may be used in combination. Whenever either "PRIORITY" alone is programmed "ON", and the scanner is stopped on an active channel, the "PRIORITY" channel will be sampled approximately once a second for activity. In this mode, the scanner will switch to the "PRIORITY" channel whenever a signal is received on that channel.

When both "PRIORITIES" are programmed "ON", and the scanner is stopped on another active channel, the PRIORITY channels are sampled alternately for activity. In this mode, the scanner will switch to Channel 1 if a signal is received on Channel 1, or to the other "PRIORITY" channel if a signal appears on that channel. However, while stopped on the second "PRIORITY" channel, Channel 1 will be sampled approximately once a second for activity. If a signal appears on Channel 1 during the time the scanner is stopped on the second "PRIORITY" channel, the scanner will switch to Channel 1. Thus, Channel 1 has preference. When the scanner stops on either "PRIORITY" channel, the readout will display the channel frequency followed by a "p".

No more than two "PRIORITY" channels may be programmed.

The receiver must be in SCAN mode or MANUAL mode to enter or remove the Priority feature.

The scanner does not have to be on Channel 1 to enter or remove Channel 1 Priority, it may be scanning or locked on any channel.

Any frequency in the band may be used as a Priority frequency in Channel 1. Make sure the desired frequency has been entered in Channel 1 before Channel 1 Priority is activated.

#### ENTER CHANNEL 1 "PRIORITY"

Touch PRIORITY. "Prior" will appear on readout.

Touch CHANNEL NUMBER 1. If the receiver is in MANUAL mode, "Prior" will disappear on readout and be replaced with the channel frequency followed by a "p". If in SCAN mode, the channel will jump to the next channel and resume scanning.

#### REMOVE CHANNEL 1 "PRIORITY"

Touch PRIORITY. "Prior" appears on readout.

Touch CHANNEL NUMBER 1. In MANUAL mode, "Prior" will disappear and be replaced with the channel frequency without "p". In SCAN mode, the channel will jump to the next channel and resume scanning.

Each time PRIORITY-Channel 1 is touched, the CHANNEL 1 PRIORITY will alternately turn on and off.

#### ENTER "SECOND PRIORITY"

(Channel 2 through 16)

The second "PRIORITY" may be entered into any channel except Channel 1.

Any frequency in the band may be used as the priority frequency in the "SECOND PRIORITY" channel.

The scanner does not have to be on the selected channel to enter "SECOND PRIORITY", it may be scanning or locked on any channel.

Touch PRIORITY. "Prior" appears on readout.

Touch the CHANNEL NUMBER of the channel to be used for second "PRIORITY". In MANUAL, "Prior" will disappear on readout and be replaced by the channel frequency followed by a "p". In SCAN mode, the scanner will jump to the next channel and resume scanning.

#### REMOVE "SECOND PRIORITY"

Touch PRIORITY.

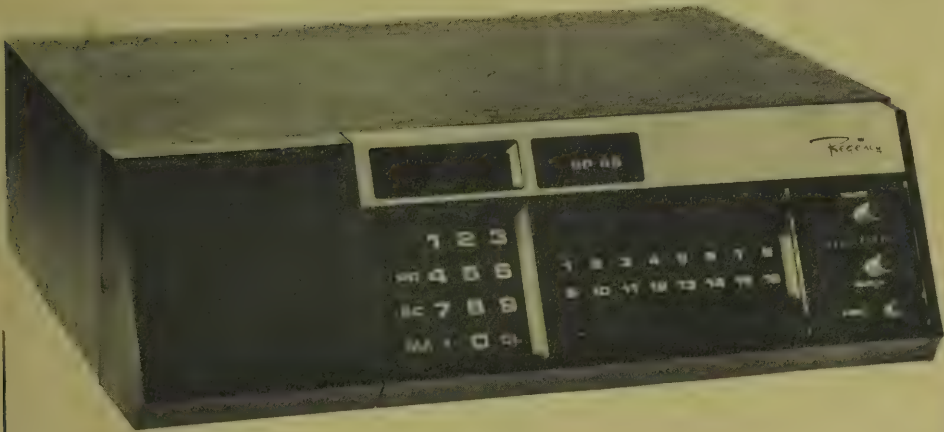


ACT-T-16K

# The Touch.™

by

  
the first name in solid state®.

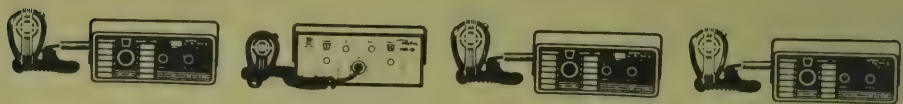


## Owner's Manual



# AMATEUR RADIO

For all your amateur FM needs



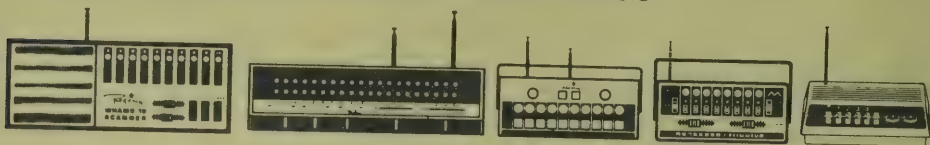
# MARINE RADIO

Powerful and positive communications for ship-to-shore . . . ship-to-ship



# ACTION RADIO

More than 25 VHF High and Low Band or  
UHF Band Monitorradio / Scanner Receiver Models



# PROFESSIONAL RADIO

Low-cost, powerful 2-way communications in High or Low VHF  
and UHF Bands for business, public service and farms





## PACKING LIST

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- 1 - AC Power Cord
- 1 - Telescope Antenna with Right Angle Adapter
- 1 - Instruction Manual
- 1 - Warranty Card To be filled out and returned to:  
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**WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.**

**WARNING: Before using internal battery, please read Battery Section on page 6 .**



## **MAINTENANCE**

All servicing should be referred to a qualified electronic technician.  
**UNAUTHORIZED ADJUSTMENTS MAY DAMAGE THE  
EQUIPMENT, OR RESULT IN IMPROPER OPERATION.**

## **OPERATION**

The sections on Installation and Operation should be thoroughly read before operating the unit. Reading the instructions will result in maximum performance and enjoyment of your radio. In the event of difficulty, refer to the Detailed Function Descriptions and the Troubleshooting Chart on page 16 .

## **DESCRIPTION**

The Regency ACT-T-16K is a programmable 16-channel, three band, FM monitor receiver. It is a double conversion superheterodyne used to receive the narrow band FM communications in the amateur, public safety, and business bands, 30-50 MHz, 146-174 MHz and 440-512 MHz.

The need for crystals has been eliminated by the use of computer type circuits which permits the frequency of each channel to be entered by a keyboard numbered like the one used on a telephone.

Any combination of one to sixteen channels may be scanned.

Manual selection of channels is available to permit continuous monitoring of any one channel.

Channel 1 can be programmed as a "Priority" channel for any frequency in any band.

Channel 16 can be programmed as a "Weather Alert" channel.

A search feature permits unknown frequencies to be located. Keyboard programming permits searching any segment of any one band, or an entire band if desired.

The ACT-T-16K may be operated from 117 VAC or 12 VDC.

Provisions are made for external antenna and external speaker.



# ACT-T-16K SPECIFICATIONS

## Frequency Ranges:

VHF (Low Band).....	30-50 MHz
VHF (Amateur).....	146-148 MHz
VHF (High Band) .....	148-174 MHz
UHF (Amateur).....	440-450 MHz
UHF (Standard) .....	450-470 MHz
UHF (Extended) .....	470-512 MHz

## Search Scan Ranges (Maximum):

LO VHF.....	30.000-49.995 MHz
HI VHF .....	146.000-173.995 MHz
UHF .....	440.00-511.9875 MHz

## Search Frequency Increments:

VHF .....	5 KHz
UHF.....	12.5 KHz

## Sensitivity (12 DB Sinad; maximum):

LO VHF (34-46 MHz) .....	0.35 uV
LO VHF (30-34; 46-50 MHz).....	0.6 uV
HI VHF (150-170 MHz) .....	0.4 uV
HI VHF (146-150; 170-174 MHz) .....	0.6 uV
UHF (450-495 MHz).....	0.7 uV
UHF (440-450 MHz).....	1.0 uV
UHF (495-512 MHz).....	1.6 uV

## Sensitivity (12 DB Sinad; at tune-up):

LO VHF (30-50 MHz) .....	.25 uv
HI VHF (146-174 MHz) .....	.35 uv
UHF (440-512 MHz).....	.50 uv

## Squelch Sensitivity (Threshold; at tune-up):

LO VHF (30-50 MHz) .....	.25 uv
HI VHF (146-174 MHz) .....	.35 uv
UHF (440-512 MHz).....	.50 uv

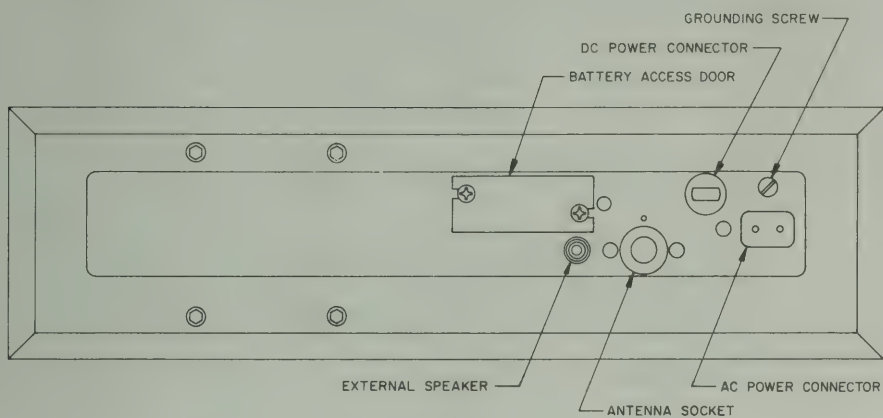
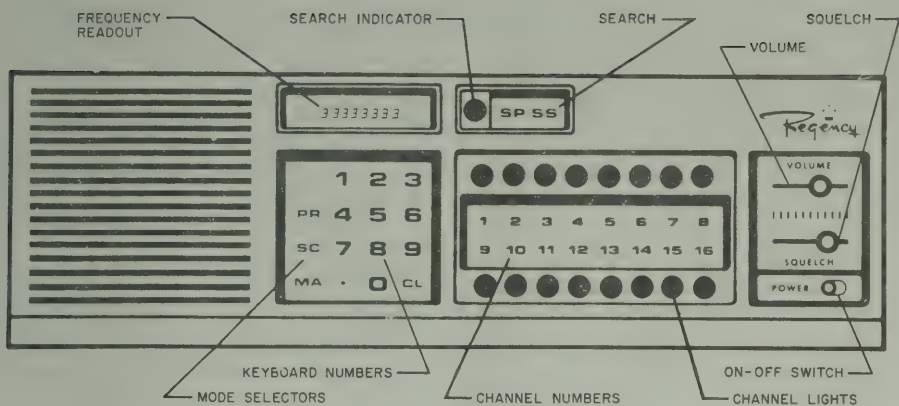
Selectivity .....	$\pm 7.5$ KHz @ 6 DB $\pm 18$ KHz @ 60 DB
-------------------	--

Spurious Rejection (except Primary Image) .....	50 DB
---	-------

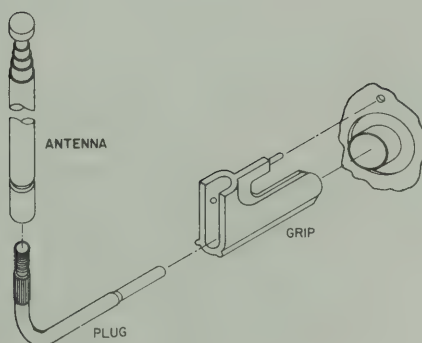
Modulation Acceptance .....	$\pm 7$ KHz
-----------------------------	-------------

I.F. Frequencies .....	1st I.F.: 10.7 MHz (crystal filter) 2nd I.F.: 455 KHz (ceramic filter)
Reference Oscillator (Synthesizer) .....	Crystal Controlled
Scanning Rate.....	Approx. 15 channels per second
Search Scanning Rate:	
VHF.....	Approx. 15 seconds per megaHertz
UHF.....	Approx. 6 seconds per megaHertz
Audio Output .....	1 Watt @ 5%, or less, distortion; 2 Watts maximum
Speaker (Internal) .....	8 Ohms; 3" Square
Power .....	110-130 VAC, 60 Hz; 18 Watts max. 11.5-15 VDC; 10 Watts max.
Battery (Memory saver; optional) .....	9 volt, transistor radio type
Semiconductors:	
Integrated Circuits .....	28
Transistors .....	33
Diodes (Total).....	42
Rectifier.....	3
Varactor .....	8
Light Emitting (LED) .....	17
Signal, Silicon.....	9
Signal, Germanium .....	5
Display (Frequency Readout).....	7 Digit, 7-Segment LED Type
FCC Certified.....	Part 15, Subpart C
UL Listed.....	Radio and Television Receiving Appliances, Receivers, Commercial
Size.....	12½" wide x 3¾" high x 9¾" deep
Weight .....	8 lbs.





REAR PANEL



# CONTROLS

## **ON/OFF Switch:**

Pushing the ON/OFF Switch to the right applies power to the receiver. Power is applied to the memory circuits at all times when the power cord is plugged in. Turning the switch off will NOT cause loss of memory.

## **Volume:**

Moving the Volume Control knob to the right will increase the sound from the internal speaker, or the external speaker if one is installed. Moving the control to the left reduces the volume.

## **Squelch:**

The Squelch Control is used to remove the background noise between stations and to obtain proper scanning action. The control should be moved to the right until the scanner stops or noise is heard, and then to the left just enough to eliminate the noise and proper scan action is obtained.

# BATTERY

A battery can be installed to prevent loss of channel frequency memory in the event of a power failure or the power cord is unplugged. The battery is not supplied with the receiver. A new battery should be purchased and installed at the time the receiver is purchased. The battery is a 9 volt battery of the same type used in transistor radios. An alkaline battery, or heavy duty battery, is recommended because of their longer life in this type of operation.

Batteries suitable for use in this receiver are widely available at electronic stores and other places that carry a line of batteries.

After the battery is installed, a power failure will cause the appearance of a dead receiver. Operation is restored by touching SCan or MAnual. Without a battery, power failure will cause an "E" to appear on the frequency readout and ALL memories will be lost.

A partial list of available batteries is:

## **ALKALINE BATTERIES**

Eveready #522DB

Mallory MN1604

## **HEAVY DUTY BATTERIES**

Eveready 222

Burgess 2MN6

The battery should be replaced approximately once a year in normal use. If several power failures have occurred, or if the channels lose memory after a power interruption, the battery should be replaced. The battery should be installed while the receiver is plugged in. When done in this manner, there will be no loss of memory while replacing the battery.



**NOTE:** The battery is not intended to long term memory storage. If the unit is going to be unplugged for an extended period of time, it is recommended that the battery be removed. Also it is recommended that a dead battery be removed or replaced as soon as possible.

## **BATTERY INSTALLATION**

The access cover on the battery compartment is held with 2 screws. One of these screws must be removed and the other loosened to remove the cover.

Insert the battery part way into the compartment with the terminals out. Press the snap connector onto the battery. Push the battery into the compartment and replace the cover.

## **HOME INSTALLATION**

The receiver requires very little ventilation, however, warm areas near radiators or heating vents should be avoided.

Install the battery as outlined on page 7. To conserve battery power, do not leave the receiver for any length of time without power applied.

Plug the AC cord into the AC connector on the rear of the receiver. Plug the opposite end into a 117 volt AC wall outlet.

Refer to the illustration on page 5 and assemble the telescope antenna and adapter. Make sure the plug is firmly seated in the plastic grip. Insert the adapter into the external antenna socket with the antenna straight up.

## **MOBILE INSTALLATION**

**NOTE:** Mobile reception of a police frequency by UNAUTHORIZED personnel is ILLEGAL in some areas. It is the responsibility of the person making the installation to determine that the user of this receiver is authorized or cleared through the local police department. Under no conditions can Regency Electronic, Inc., the manufacturer of this set, be held responsible for its unauthorized installation or use.

The ACT-T-16K will operate from any 12 volt, negative ground electrical system. A DC power cord, Regency part number MA-17, will be required. The DC cord should be connected to the battery, not through ignition switch.

Temporary mobile operation is possible by using a DC power cord with lighter plug attachment, Regency part number MA-18. This cord will

permit the unit to be operated while sitting on the seat. The telescope antenna will usually be sufficient for this type of operation.

A coupling harness, Regency part number MA-5, is available to allow the AM auto antenna to be used with the ACT-T-16K.

## PROGRAMMING

The switches on the touch panels are located under the number or letters. The switches are operated by applying light pressure with a finger directly on the number or letters. A slight "click" will be felt to indicate that the switch has operated.

When power is first applied, ALL 16 channels are pre-programmed to 162.55 MHz, the primary frequency of the weather bureau. Also an "E" will appear on the readout. The E may be removed by touching CL, or it may be ignored. Touch PR and proceed with programming.

The frequency in any channel may be changed as desired.

Any frequency may be entered into channel 16 memory, however, the Channel 16 Weather Alert feature will operate ONLY on a Weather Bureau frequency.

Mobile telephone frequencies may be programmed into any channel. A tone filter has been built into the receiver to prevent the scanner from stopping on an inactive channel transmitting only a tone signal.

## PROGRAMMING CHANNEL FREQUENCIES

Touch PR

Touch desired channel number

Touch CL

Enter the frequency by touching the numbers on the keyboard in the proper order, be sure to enter the decimal point at the correct place.

Touch channel number.

If an "E" appears on the readout, the frequency is invalid (see page 12). Touch CL and re-enter a valid frequency.

Repeat this procedure for each of the remaining channels to be programmed.

When all desired channels are programmed, touch SC. If necessary, adjust the Squelch Control to obtain proper scan action. The channels that are not to be scanned may be turned OFF by touching their channel numbers two times in rapid succession. This is necessary to eliminate sta-



tions such as the Weather Bureau which broadcast continuously. The channels may be turned back on by touching their number once. The scanner will immediately go to the selected channel, pause and then resume scanning.

## **PROGRAMMING CHANNEL 1 PRIORITY**

The Priority feature for Channel 1 may be programmed ON or OFF as desired. When the Priority feature has been selected and the scanner is locked on another channel, Channel 1 will be sampled approximately once a second for activity. In this mode of operation, the scanner will switch to Channel 1 whenever a signal is received on Channel 1. With the Priority feature programmed OFF, Channel 1 will be scanned in sequence with the other channels.

The receiver must be in SCan mode or MAnual mode to enter or remove the Priority feature.

The scanner does not have to be on Channel 1 to enter or remove Priority, it may be scanning or locked on any channel.

Any frequency in any band may be used as a Priority frequency in Channel 1. Make sure the desired frequency has been entered in Channel 1 before Channel 1 Priority is activated.

### **ENTER CHANNEL 1 "PRIORITY"**

Touch Keyboard number "1".

Touch decimal point.

### **REMOVE CHANNEL 1 "PRIORITY"**

Touch Keyboard number "1".

Touch CL.

### **CHANNEL 16 "WEATHER ALERT"**

Channel 16 "Weather Alert" includes a tone circuit which is activated when the Weather Bureau transmits an alert tone to warn of severe weather conditions. Make sure the correct weather frequency for your area is entered in Channel 16.

Check with your Regency dealer, or local Weather Bureau for the frequency in use in your area.

The receiver must be in MAnual mode for proper "Weather Alert" operation. Also, it should be programmed to monitor an inactive channel (a channel with no transmissions).

## **ENTER CHANNEL 16 "WEATHER ALERT"**

Touch MA

Touch Channel Number of any inactive channel

Touch Keyboard number "2"

Touch decimal point

## **REMOVE CHANNEL 16 "WEATHER ALERT"**

Touch Keyboard number "2".

Touch CL.

## **PROGRAMMING SEARCH FREQUENCIES**

Two frequencies are used in the Search mode. The rules for these frequencies are:

Both frequencies **MUST** be in the same band.

The **START** frequency **MUST** be lower than the **STOP** frequency.

Programming the Search frequencies has no effect on the frequencies that have been programmed into channels 1 and 2 memories for **SCan** or **MANual** functions.

The frequencies that appear on the readout at the beginning of programming the **SEARCH** feature's **START** and **STOP** frequencies have no meaning. They may be removed by touching **CL** or simply ignored and the desired frequency written over them.

## **ENTER SEARCH "START" FREQUENCY**

Touch **SP**

Touch **CL**.

Enter **START** (lower) frequency by touching the Keyboard numbers in the proper order. Be sure to include the decimal point.

Touch Channel number 1.

If an "E" appears on the readout, the **START** frequency is incorrect, or not within a band. Touch **CL** and re-enter the correct frequency.

## **ENTER SEARCH "STOP" FREQUENCY**

Touch Channel number "2"

Touch **CL**.



Enter STOP (higher) frequency by touching the Keyboard numbers in the proper order. Be sure to enter the decimal point.

Touch Channel number "2".

If an "E" appears on the readout:

The START and STOP frequencies are not in the same band.

The STOP frequency is lower than the START frequency.

Touch SS to start the search. If the readout immediately displays the START frequency and noise is heard, move the Squelch Control to the left just enough to stop the noise and touch SS again.

When an active channel is found, the Search will stop and the frequency will be displayed.

Touch SS to resume the search.

The search may be operated manually if desired.

Move the Squelch Control to the right until the Search stops. With the Squelch Control in this position, the Search frequency will move one step each time SS is touched.

## OPERATION HINTS

Following the instructions presented thus far should result in a properly operating receiver, however, there are, in addition to the specific instructions, some hints that may prove helpful and improve the overall operation.

1. Set the Squelch Control halfway between threshold (the point where the noise just disappears) and the full left position. This setting will reduce any tendency the receiver may have to respond to undesired frequencies. Some experimenting with the Squelch Control setting is recommended to obtain the best results in any particular location.
2. If a desired signal appears to be received at more than one frequency, select the frequency that results in clearest reception (voice not garbled, least noise, etc.). This effect is most likely to occur on very strong signals.
3. In the Search mode, limit the search range to one megaHertz or even less. This will increase the chance of catching an unknown station while it is transmitting. The transmissions are usually short.
4. Select the Start and Stop frequencies of the Search mode to avoid known birdies. This may be done by limiting the range to be searched to small segments just above or below the birdies. This will help to avoid the search being stopped by undesired frequencies.

## FUNCTION DESCRIPTIONS

The **FREQUENCY READOUT** is used while programming frequencies into the channel memories and while programming Search frequencies. Frequencies are displayed when the receiver is in Program mode. When PR is touched, the readout will display the frequency stored in the memory of whatever channel the receiver is on at the time. The START and STOP frequencies are displayed during SEARCH programming. During SEARCH SCAN, readout will display the frequency the search is on whenever the search is stopped.

An "E" will appear on the readout whenever an attempt is made to enter an invalid frequency into a channel memory, or into the START or STOP frequency of the search feature. The frequency is invalid when it does not fall within one of the bands covered by the receiver. The E may be removed by touching CLear or it may be written over with another frequency.

The memories will accept three numbers AFTER the decimal point on low band and high band. Whenever the numbers AFTER the decimal point are invalid or four numbers are entered, the circuits will round them to the nearest valid frequency when the frequency is entered into the channel memory. On UHF, the memories will accept four numbers AFTER the decimal point, however, if they are invalid, it will round them to the nearest valid frequency when the frequency is entered into a channel memory.

**KEYBOARD NUMBERS** zero through 9 and decimal point are used to enter frequencies into the channel memories. In addition, number 1 is used with the decimal point to select Channel 1 Priority and with CL to remove Channel 1 Priority.

**KEYBOARD NUMBER 2** is used with decimal point to select Channel 16 "Weather Alert" and with CL to remove Channel 16 "Weather Alert."

**CHANNEL NUMBERS** are used to select channels. In the Program mode, the frequency in the channel memory will be displayed when a channel number is touched. In Scan mode, touching a channel number twice in rapid succession will remove the channel from the scanning action. Touching the channel number once will turn the channel back on. (In Manual mode, the channel selected is activated for continuous monitoring.) Channel numbers "1" and "2" are used to program the START and STOP frequencies in the Search feature. The normal scan frequencies entered into Channels 1 and 2 memory are not affected by Search programming. These are separate functions.

CL is used to clear numbers from the digital display. Anytime the readout is displaying numbers, touching CL will clear the numbers from the readout. Removing the numbers from the display before entering a



new or different frequency into a channel memory is not necessary. The new frequency may be written over the previous frequency, however, removing the numbers from the display is recommended to reduce confusion until the operation becomes more familiar. The numbers are removed only from the readout, the frequency entered in a channel memory cannot be removed with CL. CL is also used with Keyboard numbers "1" and "2" to remove the Channel 1 Priority and Channel 16 "Weather Alert."

PR is used to put the unit in PROgram mode. In this mode, the frequencies in the channel memories can be changed. All other functions such as scan, audio, output, etc. are turned off. Whenever a frequency is incorrectly programmed, or the frequency is not in one of the bands the receiver covers, an "E" will appear on the readout when an attempt is made to enter the frequency. PR may also be used to check the frequency stored in any channel memory. Whenever PR is touched, the readout will display the frequency stored in whatever channel the unit is on. Any, or all other channels may be checked by touching the channel numbers in any desired order.

SC is used to put the unit in SCan mode. In SCan mode, the channels are scanned in order and the scanner will stop on any channel that has a signal. All channels that have been programmed out will be skipped.

MA is used to put the unit in MAnual Selection mode. In MAnual, the channels are selected manually by touching the channel numbers. The channels may be selected in any order. Manual mode is also used with Channel 16 "Weather Alert."

Operation in the MAnual mode has no effect on the way the channels have been set up for operation in the SCan mode. However, programming a new frequency into a channel memory while in MAnual mode will change the frequency in that channel in SCan mode.

SP is used to put the unit in Search Program mode. In this mode, the frequency range of the Search feature is entered. The Search feature may be programmed to search any part, or all, of any one band. For best results, the search should be limited to approximately 1 MHz. The frequencies are entered in the search memories by means of the Channel 1 and Channel 2 numbers. The Search mode is completely separate from the Scan and Manual modes. Programming the Search mode has no effect on the frequencies stored in Channel 1 or Channel 2.

SS is used to start the search. After the frequency limits are programmed, touching SS will start the search. The search will begin at the lower (START) frequency and search towards the higher (STOP) frequency. The Red light next to the Search panel will flicker to indicate that the Search is in progress. When a signal is found, the search will stop and the frequency will be displayed on the readout. Strong signals may cause

the search to stop one step before the proper frequency. If the signal is noisy or distorted, touch SS to move the frequency. If nothing is heard on the frequency, touch SS to continue the search. See page 14 .

When a frequency of interest is located, the frequency should be recorded for later entry into a channel memory. Touching SS while the search is in progress will stop the Search and the readout will display the frequency the search is on at the that time. Touching SS will continue the Search from the point where it was stopped. SS is also used to continue the search after it has stopped on a signal. The Search function will not start again after being stopped until SS is touched. Thus, no frequency will be missed because you were not present or not watching.

## BIRDIES

Every complex receiver has frequencies that are difficult or impossible to receive. These frequencies are called "Birdies." The following is a partial list of the birdie frequencies that will occur in the ACT-T-16K.

<b>LOW BAND VHF</b>	<b>HIGH BAND VHF</b>	<b>UHF BAND</b>
30.735	146.420	444.6500
31.440	147.600	452.6750
32.075-.130	149.840	454.1000
33.580	150.955	458.3000
33.950	152.840	461.4000
34.950	153.475-.530	463.7875
36.625	154.980	466.0500
38.500	155.350	467.3625
40.980	157.310	468.7250
41.975	159.900	471.9750
44.195	161.725	476.7500
44.650	161.780	479.2625
46.365	163.375	485.0750
48.830	166.050	485.4375
49.500	169.740	489.3000
	170.230	491.3000
	170.900	494.1875
	173.800	497.1250
	173.960	500.0000
		500.4625
		501.9000
		505.2000
		505.3500
		506.9375
		507.8375
		508.2250

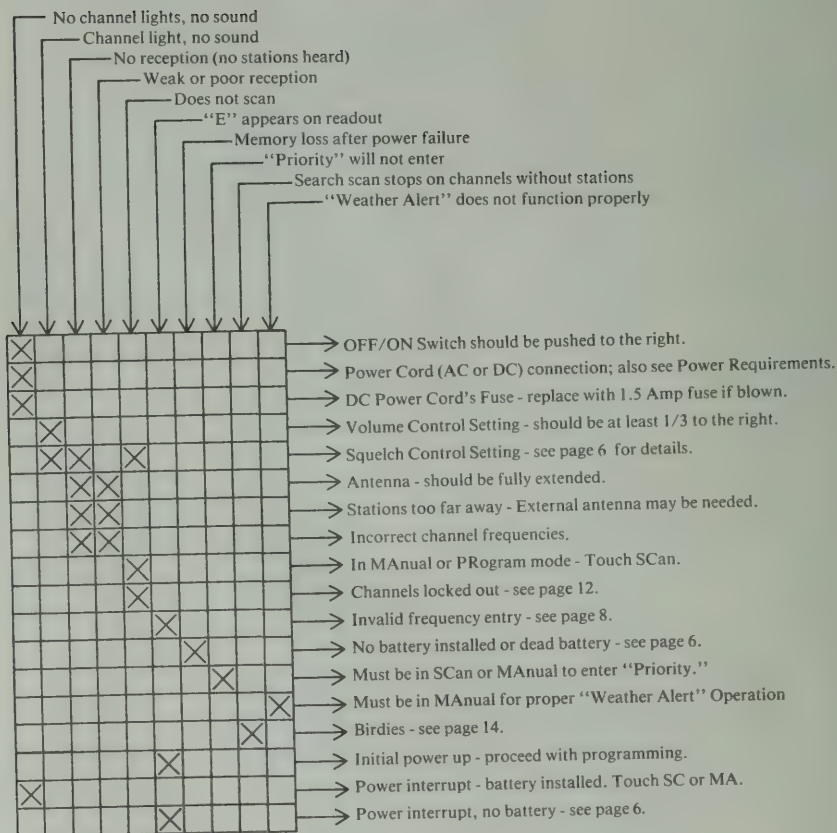


In addition, there are other frequencies that have difficulty because of interference from T.V. stations, FM stations, other receivers, and sources of man-made noise. These frequencies vary from location to location and are therefore impossible to list. When this type of interference is encountered, the interference can sometimes be eliminated by moving the Squelch Control to the left (increase squelch action).

# TROUBLESHOOTING GUIDE

**NOTE:** Please perform the simple checks indicated for improper operation before returning the unit for service.

## SYMPTOM





**THE LAW**\_\_\_\_\_concerning possession and use of monitor receivers is embodied in Federal regulations based on Section 605 of the Communications Act of 1934. This FCC regulation does not prohibit listening to Public Service Band frequencies. It does prohibit persons from making use of information heard broadcast on Public Service Bands, for private gain. Some States' law prohibits the use of mobile monitors except by authorized vehicles.

#### OFFICIAL NATIONAL TEN CODE SIGNALS

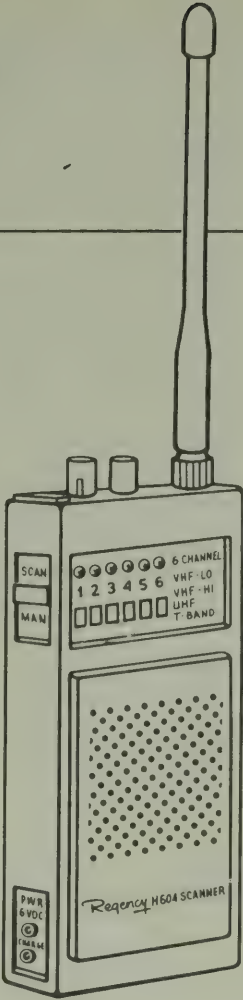
10-0	Caution	10-41	Beginning tour of duty
10-1	Unable to copy - change location	10-42	Ending tour of duty
10-2	Signals good	10-43	Information
10-3	Stop transmitting	10-44	Request permission to leave patrol ... for ...
10-4	Acknowledgement	10-45	Animal carcass in ... lane at
10-5	Relay	10-46	Assist motorist
10-6	Busy - stand by unless urgent	10-47	Emergency road repairs needed
10-7	Out of service (Give location and/or telephone number)	10-48	Traffic standard needs repairs
10-8	In service	10-49	Traffic light out
10-9	Repeat	10-50	Accident - F, PI, PD
10-10	Fight in progress	10-51	Wrecker needed
10-11	Dog case	10-52	Ambulance needed
10-12	Stand by (Stop)	10-53	Road blocked
10-13	Weather and road report	10-54	Livestock on highway
10-14	Report of prowler	10-55	Intoxicated driver
10-15	Civil disturbance	10-56	Intoxicated pedestrian
10-16	Domestic trouble	10-57	Hit and run - F, PI, PD
10-17	Meet complainant	10-58	Direct traffic
10-18	Complete assignment quickly	10-59	Convoy or escort
10-19	Return to ...	10-60	Squad in vicinity
10-20	Location	10-61	Personnel in area
10-21	Call ... by telephone	10-62	Reply to message
10-22	Disregard	10-63	Prepare to make written copy
10-23	Arrived at scene	10-64	Message for local delivery
10-24	Assignment completed	10-65	Net message assignment
10-25	Report in person to (Meet) ...	10-66	Message cancellation
10-26	Detaining subject, expedite	10-67	Clear to read net message
10-27	Drivers license information	10-68	Dispatch information
10-28	Vehicle registration information	10-69	Message received
10-29	Check records for wanted	10-70	Fire alarm
10-30	Illegal use of radio	10-71	Advise nature of fire (Size, type, and contents of building)
10-31	Crime in progress	10-72	Report progress on fire
10-32	Man with gun	10-73	Smoke report
10-33	Emergency	10-74	Negative
10-34	Riot	10-75	In contact with
10-35	Major crime alert	10-76	En Route
10-36	Correct time	10-77	ETA (Estimated Time of Arrival)
10-37	Investigate suspicious vehicle	10-78	Need assistance
10-38	Stopping suspicious vehicle (Give station complete description before stopping).	10-79	Notify coroner
10-39	Urgent - use light and siren	10-80	Chase in progress
10-40	Silent run - no light or siren	10-81	Breathalyzer report
		10-82	Reserve lodging
		10-83	Work school xing at ...
		10-84	If meeting ... advise ETA
		10-85	Delayed due to ...
		10-86	Officer/operator on duty
		10-87	Pick up checks for distribution
		10-88	Advise preferred telephone number of ...
		10-89	Bomb threat
		10-90	Bank alarm at ...
		10-91	Pick up prisoner/subject
		10-92	Improperly parked vehicle
		10-93	Blockade
		10-94	Drag racing
		10-95	Prisoner/subject in custody
		10-96	Mental subject
		10-97	Check (Test) signal
		10-98	Prison or jail break
		10-99	Records indicate wanted or stolen

103 EN

HP I



# Owner's Manual



# Regency Scanners Model H604



# Packing List

- 1 - Receiver Unit
- 1 - Flexible Antenna
- 1 - Wire Antenna
- 1 - Instruction Manual

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## Maintenance

If your unit does not operate properly, refer to the troubleshooting guide on page 8 and make the suggested adjustment. If the problem persists, send the unit to the Regency Customer Service Department as per the instructions outlined by the warranty statement on the back cover of this manual. DO NOT attempt additional service to this unit yourself. All servicing should be referred to a qualified technician. UNAUTHORIZED ADJUSTMENTS MAY DAMAGE THE EQUIPMENT OR RESULT IN IMPROPER OPERATION AS WELL AS INVALIDATE THE WARRANTY.

Please record Serial Number and Date of Purchase:

Serial No. \_\_\_\_\_ Date Purchased \_\_\_\_\_

IMPORTANT: To have your H604 serviced under the warranty, dated proof of purchase (sales receipt) must be sent in with the unit.

Do not return batteries with unit.

See warranty on back cover.

# Description

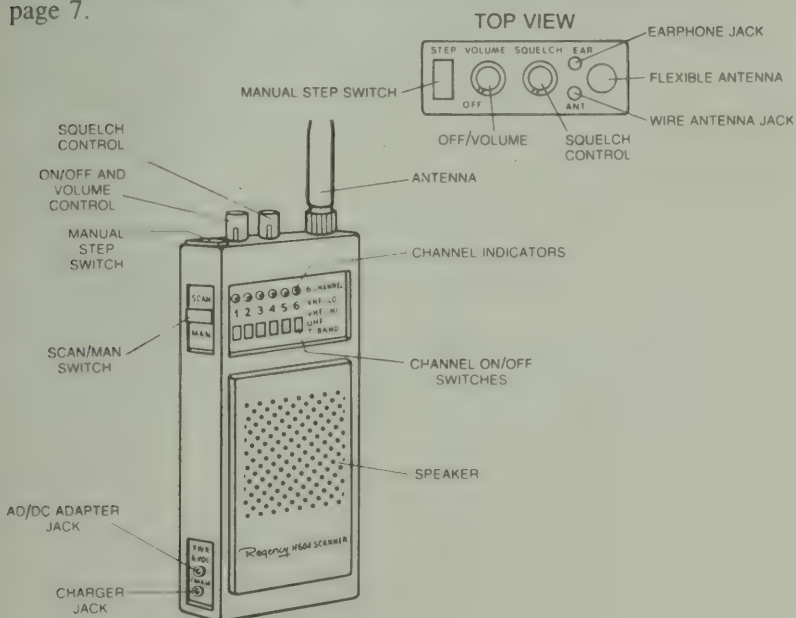
Your Regency H604 is a pocket size, hand held, 4 band, 6 channel, crystal controlled FM monitor receiver. It is a double conversion, superheterodyne designed to receive any frequency in the public safety, business and amateur 2-meter bands: 30-50 (Low VHF), 146-174 (High VHF) and 450-512 (two segments in UHF) MHz.

Channel switches are provided to permit scanning any combination of two to six channels when set to automatic scan. Manual selection permits continuous monitoring of any one channel.

This unit operates on 4 AAA dry cell or Nickel-Cadmium batteries as well as 120 Volt AC current. An AC Adapter/Charger is available to recharge Nickel-Cadmium batteries or provide AC power when desired. The H604 *can* be operated while the Nickel-Cadmium batteries are being recharged.

The H604 utilizes silicon transistors throughout for dependability. The use of Integrated Circuits provides compactness and circuit reliability. A crystal filter in the first I.F. and a ceramic filter in the second I.F. ensures optimum performance in areas of the country where many of the services are very closely grouped together. In addition, an Automatic Frequency Control (AFC) circuit (for UHF only) provides automatic adjustment to the receiver's local oscillator frequency in order to compensate for any small change to the station's carrier or receiver frequency.

Other features include: AC power adapter jack, battery charger jack, earphone jack and wire antenna jack. A list of optional accessories includes: package of 4AAA Nickel-Cadmium batteries, AC Adapter/Charger, carrying case, earphone and flexible antenna — see page 7.





# Controls

## OFF/VOLUME

The knob marked "VOLUME" controls the audio output of the speaker and also provides power to the unit. Rotating this knob clockwise turns the unit on. A "Click" indicates power is on. Further clockwise turning of this knob increases the volume. Set the knob such that the white indicator is pointing toward the word "VOLUME" prior to programming. When turning off the unit, be sure the "VOLUME" knob is turned fully counterclockwise until the "click" is heard or the unit will remain on and needlessly discharge the batteries.

## SQUELCH CONTROL

The knob marked "SQUELCH" is used to eliminate background noise in the absence of a signal. Turning the knob clockwise decreases the squelch action. When turned all the way clockwise, background noise will be heard. In addition, the unit will stop on a channel and not scan. The proper adjustment is the point where the background noise just disappears and proper scanning action is obtained. Turn the squelch knob counterclockwise until this is achieved. Further counterclockwise turning of the squelch knob past this point may result in poor reception of weaker signals. During scan, the squelch knob may have to be turned counterclockwise just enough to eliminate false stopping on channels without a signal or crystals.

## SCAN/MAN

This switch is used to select either automatic scanning or manual selection of the channels and is located on the left side of your unit. With the switch in the UP (SCAN) position and the squelch set, the unit will scan up to 6 channels from left to right. Pushing the switch DOWN (MAN), allows each channel to be selected manually using the STEP switch.

## STEP SWITCH

The STEP switch, located to the left of the VOLUME knob, can be used to select the channels when the SCAN/MAN switch is DOWN (MAN). Pushing the STEP switch DOWN and then releasing it, causes the scanner to move one channel. Push the STEP switch whatever number of times is necessary to reach the desired channel. NOTE: Any channel that is de-activated (turned off) will be skipped. This holds true also when scanning — see page 6.

# Crystal Selection and Installation

## ORDERING CRYSTALS

This receiver requires one crystal for each frequency you wish to receive. The frequency of the various services varies from area to area. Your local Regency dealer can assist you in ordering crystals and provide the frequency information you need for your area. Crystals are usually available from place of purchase.

If you decide to order crystals, however, the ordering information should include the model number of the receiver (H604) as well as the frequency you wish to receive. The following information should also be included.

### A. Low VHF Band Crystals (30 to 50 MHz)

1. Crystal frequency, determined as follows:

$$\text{Crystal frequency} = \text{Channel frequency} + 10.7\text{MHz}$$

2. Frequency tolerance of .002%
3. Series resonance - 450 Hz; 3rd Overtone

### B. High VHF Band Crystals (146 to 174 MHz)

1. Crystal frequency, determined as follows:

$$\text{Crystal frequency} = \frac{\text{Channel frequency} - 10.7\text{MHz}}{3}$$

2. Frequency tolerance of .001%
3. Series resonance - 450 Hz; 3rd Overtone

### C. UHF Crystals (450 to 470 MHz)

1. Crystal frequency, determined as follows:

$$\text{Crystal frequency} = \frac{\text{Channel frequency} - 10.7\text{MHz}}{9}$$

2. Frequency tolerance of .001%
3. 3rd Overtone; load capacitance of 18 PF.

### D. T-Band Crystals (470 to 512 MHz)

1. Crystal frequency =  $\frac{\text{Channel frequency} - 10.7\text{MHz}}{10}$

2. Frequency tolerance of .001%

3. 3rd Overtone; load capacitance of 18PF.

### E. All Crystals

1. Maximum equivalent series resistance of 35 ohms.
2. Maximum drive level of 1 milliwatt.
3. Holder is an HC-25/u with pin leads (plug-in type).

# Crystal Installation and Programming

**NOTE: THIS RADIO WILL NOT OPERATE UNTIL THE PROPER CRYSTALS ARE INSTALLED.**

The crystal access cover is located at the top of the right side panel of the unit. To remove the cover, place thumb on ridges and push outward in direction of arrow (see figure 1). A crystal layout diagram is located inside the cover.

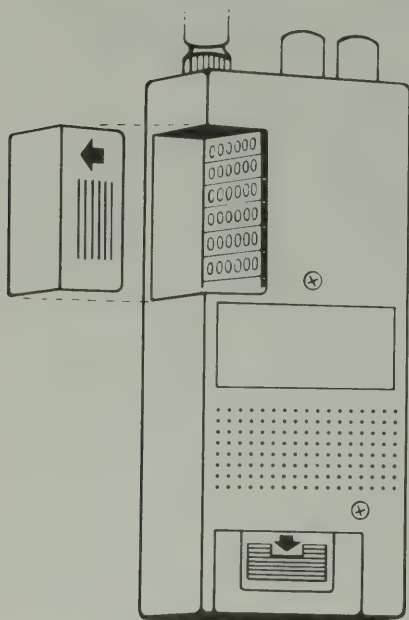


Figure 1

## CRYSTAL LAYOUT

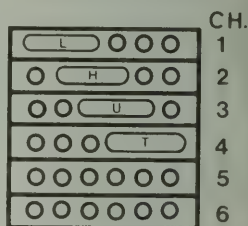


Figure 2

Up to six crystals may be installed in any order desired; all low band, all high band, all UHF, T-Band, or in any combination. Figure 2 shows the crystal socket layout. For low band crystals, use the first and third socket holes from the LEFT. For high band crystals, use the second and fourth socket holes from the LEFT. For UHF band crystals, use the second and fourth socket holes from the RIGHT. For T-band crystals, use the first and third socket holes from the RIGHT. Channel 1 is nearest the top of the radio.

Insert each crystal into the desired socket until firm contact is made. There is no polarity to be observed when installing crystals. **IMPORTANT:** Metal base crystals should be inserted so that the crystal base does not touch the top of the socket pin. A fully seated metal base crystal may cause the oscillator circuit to operate improperly.

After all crystals have been installed, snap the cover into place.

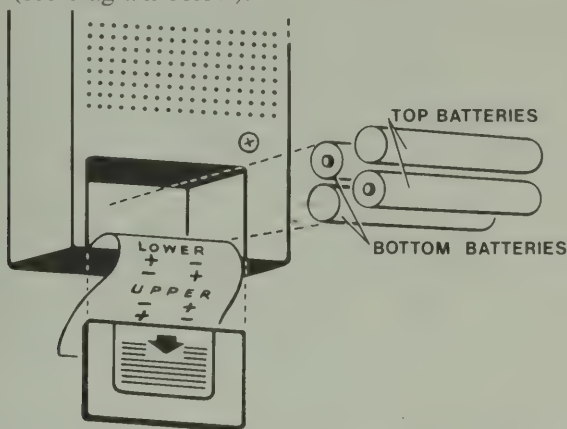


# Battery Installation

Four AAA batteries are required to operate your H604 pocket scanner. Your Regency dealer stocks AAA dry cells as well as the pack of 4 Nickel-Cadmium rechargeable batteries (accessory MA505) to fit your unit.

Dry cell batteries should be replaced when your unit fails to scan and/or the volume becomes low. In addition, do NOT leave discharged batteries in the unit for any length of time as leakage may damage the receiver. It is highly recommended that AAA alkaline batteries be used because of their longer life in this type of operation.

The battery compartment is located on the back of the unit. Remove the cover by pressing down on the ridges and pushing outward in direction of arrow (see diagram below).



Insert the four AAA batteries into the compartment as indicated by the diagram. **IMPORTANT:** Be sure to observe battery polarity during installation. If batteries are incorrectly inserted, the unit will not operate and possible damage to the batteries and/or unit may result.

**NOTE:** If unit is to be unused for several months, remove AAA dry cell batteries to prevent possible power loss and leakage.

## Antenna

### FLEXIBLE

Prior to operation, insert the flexible antenna into the antenna socket located on the top of your unit — see diagram on page 1. Tighten until metal base of antenna is secured against top of radio.

### WIRE

A special wire antenna, complete with phone plug attachment, can be used instead of the flexible antenna if better reception is desired. Insert the plug at the end of the wire antenna into the jack marked "ANT" on the top of your unit. Stretch the wire to its fullest vertical extension for maximum reception capability.

# Operation

With crystals, batteries and antenna properly installed, your unit is ready for operation. Turn the receiver on by rotating the "VOLUME" knob clockwise. A "click" indicates the receiver is on. Set the squelch following the instructions outlined on page 2.

Each of the channels has an on/off switch located just below the channel number. When the switch for any channel is ON (up position), that channel will be included in the scanning sequence or the manual step function. Pushing the switch to OFF (down position) turns the channel off and it will not be included in either scan or manual step functions.

To scan each channel automatically, push the SCAN/MAN switch located on the left side of the unit UP (SCAN). Each channel with its switch up will be sampled for activity. Be sure squelch has been set properly — see page 2. The red channel indicator above each channel will light as it is sampled. When a signal is received, the unit will stop scanning and the channel's indicator will remain lighted while the transmission is broadcast. At its conclusion, the unit will wait approximately two seconds for a reply before resuming scanning automatically.

If the unit stops on a very active channel during the scanning process, push the SCAN/MAN switch DOWN (MAN). Now the unit is in manual on that channel. Instead of resuming scanning after the transmission ends, the unit will stay on that channel for continuous monitoring until the SCAN/MAN switch is moved to SCAN.

With the SCAN/MAN switch in the MAN position, the step switch located to the left of the VOLUME knob can be used to step to a desired channel manually, one at a time in numerical order. Simply depress the step switch and release. Continue until the desired channel is reached.

## AC OPERATION

**CAUTION:** To avoid possible damage to the receiver and batteries, use only the Regency accessory, MA508 AC Adapter/Charger.

Plug one end of the MA508 AC Adapter/Charger into the jack marked "PWR 6V DC" on the left side of the unit. The other end of the cord should be inserted into any 120V wall outlet. If desired, the adapter may be left plugged into the AC outlet even when the unit has been disconnected for portable use.

## Earphone Jack

An earphone jack is located on the top of the unit for your convenience. Simply plug the earphone attachment into the earphone socket (EAR) on the unit. The speaker will be automatically disconnected and the radio reception will be heard only through the earphone. Your Regency dealer can provide the proper earphone attachment (MA507).

# Nickel-Cadmium Batteries

For greater operating economy, rechargeable Nickel-Cadmium batteries are recommended. Ask your Regency dealer for part number MA505 which consists of 4 AAA size, 1.2V Nickel-Cadmium batteries.

If Nickel-Cadmium batteries are used, they should be recharged when the unit fails to scan and/or the volume becomes low.

## CHARGING NICKEL-CADMIUM BATTERIES

**CAUTION:** To avoid possible damage to the receiver and batteries, use only the Regency AC Adapter/Charger (Accessory MA508).

The Regency AC Adapter/Charger can be used to charge the 4 AAA Nickel-Cadmium batteries as needed. Insert one end of the Adapter/Charger into the jack on the left side of the unit marked "CHARGE". Plug the other end into any 120V wall outlet.

**IMPORTANT:** DO NOT plug the AC Adapter/Charger into the jack labeled "CHARGE" unless rechargeable batteries are installed. Regular batteries (i.e. zinc-carbon, mercury, alkaline) may **EXPLODE** if recharging is attempted. *Only those batteries clearly marked Rechargeable Nickel-Cadmium* are to be left installed when the "CHARGE" jack is used.

Approximately 14 hours are required to fully charge the batteries. If batteries are charged for 24 hours and do not hold their charge, they should be replaced with new batteries. It is also recommended that Nickel-Cadmium batteries be recharged for the same amount of time the receiver was used. Moderate over-charging will not damage the batteries, however they should receive an overnight charge if the unit has not been used for several months.

**IMPORTANT:** The Regency H604 portable scanner CAN be operated while the Nickel-Cadmium batteries are being recharged. Allow 30 hours for proper charging if the unit is being charged and operated at the same time.

## Available Accessories and Replacement Parts

**MA 508** — Use this AC Adapter/Charger instead of batteries when desired. The unit plugs into any 120V, 50/60 Hz power source and comes with a cord and plug to fit the "PWR 6V DC" jack on the receiver.

The MA508 may also be used to charge Nickel-Cadmium batteries when used instead of standard AAA batteries.

**MA505** — Pack of 4 1.2V AAA Nickel-Cadmium batteries to replace standard AAA batteries. Nickel-Cadmium batteries may be recharged many times and will provide many hours of service.

**MA506** — Carrying case to protect your receiver as well as provide a safe way to carry the unit.

**MA507** — Earphone attachment to permit listening without disturbing others. Includes cord and plug to fit "EAR" jack on the receiver.

**MA509** — Flexible Antenna.



# Troubleshooting Guide

NOTE: Please perform the simple checks indicated for improper operation before returning the unit for service.

<b>TROUBLE</b>	<b>CHECK</b>
No channel light, no sound	OFF/VOLUME knob should be turned clockwise. Batteries not installed — see page 5. AC Adapter/Charger not connected — see page 6.
Channel light, no sound	Volume control setting — turn clockwise. Squelch control setting — see page 2.
Sound present, no light	Channel switches — should be up — see page 6.
No reception (no station heard)	Channel switches — should be up — see page 6. Flexible antenna should be installed and tightened until secure — see page 5. Wire antenna should be stretched to its fullest vertical extension. Crystal not installed properly — both leads must be firmly inserted into the sockets and metal base not touching the sockets — see page 4. Crystal frequency — see page 3 (can only be measured by service personnel).
Weak or poor reception	Flexible antenna should be installed and tightened until secure — see page 5. Wire antenna should be stretched to its fullest vertical extension. Crystal frequency — see page 3 (can only be measured by service personnel).
Does not scan	Squelch control setting — see page 2. Channel switches — should be up — see page 6. SCAN/MAN switch should be pushed up (SCAN).
Does not manually step	Channel switches — should be up — see page 6. SCAN/MAN switch should be pushed down (MAN). STEP switch — must be depressed and released to move to next channel.

# Specifications

Frequency Ranges	
VHF Band (Low)	30-50 MHz
VHF Band (High)	146-174 MHz
UFH Band	450-470 MHz
UHF Band (T)	470-512 MHz
Frequency Separation	
VHF 33-47 MHz	10db bandwidth
VHF 146-167 MHz	10db bandwidth
UHF 450-470 MHz	10db bandwidth
UHF 470-500 MHz	10db bandwidth
Sensitivity (at tune up) for 20 DB quieting	
VHF Band (Low)	0.4µv
VHF Band (High)	0.5µv
UFH Band	0.6µv
UHF Band (T)	0.6µv
Squelch Sensitivity (Threshold)	
VHF Band	0.4µv
UHF Band	0.5µv
Selectivity	60db (a 30 KHz
Spurious Rejection (except Primary Image)	
VHF Band	40db
UHF Band	20db
Modulation Acceptance	± 7 KHz
AFC Range (UHF only)	Approx. 8 KHz (± 4 KHz)
I.F. Frequency	
1st	10.7 MHz; crystal filter
2nd	455 KHz; ceramic filter
Scanning rate (typical)	approx. 15 channels per second
Audio output (8 ohms)	More than 0.1W @ 10% distortion
Power Requirements	
	6V DC (dry cell batteries)
	4.8V DC (Nickel-Cadmium batteries)
	6V DC (ext. power)*
Current Drain	
	16 mA Max. (Stand-by; squelch)
	70 mA Max. (0.1W audio output)
Size	3¾" W x 5½" H x 1" D
Weight	Approx. 9 oz. (without batteries)
FCC Certified	Part 15, Subpart C

\*Accessory MA-508 AC adapter/charger provides the necessary conversion from 120V AC to 6V DC.

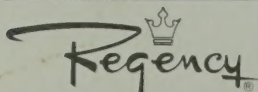
## Regency Scanners Limited Warranty

1. The warranty applies to the original or subsequent owners of the product for a period of 90 days from the original purchase date.
2. We agree to repair or replace all parts showing defects in material or workmanship.
3. Warranty service will be provided free of charge if unit is delivered to us intact, transportation charges prepaid, within 90 days of the date of sale to the original purchaser.
4. The warranty does not apply to units subject to misuse, neglect, accidents, incorrect wiring not our own, improper installation, or units used in violation of the instructions furnished by us. Nor does the warranty apply to units: damaged by lightning, excess current, repaired or altered outside the factory, or units with altered or removed serial numbers.
5. To have your unit serviced under the warranty, return it freight prepaid, with dated proof of purchase documents (sales receipt) to:

Customer Service Department  
Regency Electronics, Inc.  
7707 Records St.  
Indianapolis, IN 46226

Only factory personnel are authorized to perform warranty service. NOTE: When returning units for warranty service, do not include accessories (antenna, power cord, batteries, etc.)

6. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.



**ELECTRONICS, INC.**

**7707 Records St., Indianapolis, IN 46226**